

1 Rec'd PCT/PTO 13 FEB 2006  
10/533299

Sequence listing

<110> Pieris Proteolab AG

<120> Soluble truncated polypeptides of the Nogo-A protein, methods for the production of such polypeptides and methods for identifying compounds having detectable affinity to a Nogo-A protein

<160> 18

<210> 1

<211> 1163

<212> PRT

<213> Rattus norvegicus

<220>

<223> rat Nogo-A protein

<400> 1

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				20					25					30
Glu	Pro	Glu	Asp	Glu	Glu	Asp	Glu	Glu	Glu	Glu	Asp	Glu	Glu	
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Glu	Asp	Asp	Glu	Asp	Leu	Glu	Glu	Leu	Glu	Val	Leu	Glu	Arg	Lys
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Pro	Ala	Ala	Gly	Leu	Ser	Ala	Ala	Ala	Val	Pro	Pro	Ala	Ala	Ala
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Ala	Pro	Leu	Leu	Asp	Phe	Ser	Ser	Asp	Ser	Val	Pro	Pro	Ala	Pro
		80						85					90	
Arg	Gly	Pro	Leu	Pro	Ala	Ala	Pro	Pro	Ala	Ala	Pro	Glu	Arg	Gln
		95						100					105	
Pro	Ser	Trp	Glu	Arg	Ser	Pro	Ala	Ala	Pro	Ala	Pro	Ser	Leu	Pro
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Pro	Ala	Ala	Ala	Val	Leu	Pro	Ser	Lys	Leu	Pro	Glu	Asp	Asp	Glu
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Pro	Pro	Ala	Arg	Pro	Pro	Pro	Pro	Pro	Pro	Ala	Gly	Ala	Ser	Pro
		140						145					150	
Leu	Ala	Glu	Pro	Ala	Ala	Pro	Pro	Ser	Thr	Pro	Ala	Ala	Pro	Lys
		155						160					165	
Arg	Arg	Gly	Ser	Gly	Ser	Val	Asp	Glu	Thr	Leu	Phe	Ala	Leu	Pro
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Ala	Ala	Ser	Glu	Pro	Val	Ile	Pro	Ser	Ser	Ala	Glu	Lys	Ile	Met
		185						190					195	
Asp	Leu	Met	Glu	Gln	Pro	Gly	Asn	Thr	Val	Ser	Ser	Gly	Gln	Glu

200	205	210
Asp Phe Pro Ser Val Leu Leu Glu Thr Ala Ala Ser Leu Pro Ser		
215	220	225
Leu Ser Pro Leu Ser Thr Val Ser Phe Lys Glu His Gly Tyr Leu		
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Gly Asn Leu Ser Ala Val Ser Ser Ser Glu Gly Thr Ile Glu Glu		
245	250	255
Thr Leu Asn Glu Ala Ser Lys Glu Leu Pro Glu Arg Ala Thr Asn		
260	265	270
Pro Phe Val Asn Arg Asp Leu Ala Glu Phe Ser Glu Leu Glu Tyr		
275	280	285
Ser Glu Met Gly Ser Ser Phe Lys Gly Ser Pro Lys Gly Glu Ser		
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Ala Ile Leu Val Glu Asn Thr Lys Glu Glu Val Ile Val Arg Ser		
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Lys Asp Lys Glu Asp Leu Val Cys Ser Ala Ala Leu His Ser Pro		
320	325	330
Gln Glu Ser Pro Val Gly Lys Glu Asp Arg Val Val Ser Pro Glu		
335	340	345
Lys Thr Met Asp Ile Phe Asn Glu Met Gln Met Ser Val Val Ala		
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Pro Val Arg Glu Glu Tyr Ala Asp Phe Lys Pro Phe Glu Gln Ala		
365	370	375
Trp Glu Val Lys Asp Thr Tyr Glu Gly Ser Arg Asp Val Leu Ala		
380	385	390
Ala Arg Ala Asn Val Glu Ser Lys Val Asp Arg Lys Cys Leu Glu		
395	400	405
Asp Ser Leu Glu Gln Lys Ser Leu Gly Lys Asp Ser Glu Gly Arg		
410	415	420
Asn Glu Asp Ala Ser Phe Pro Ser Thr Pro Glu Pro Val Lys Asp		
425	430	435
Ser Ser Arg Ala Tyr Ile Thr Cys Ala Ser Phe Thr Ser Ala Thr		
440	445	450
Glu Ser Thr Thr Ala Asn Thr Phe Pro Leu Leu Glu Asp His Thr		
455	460	465
Ser Glu Asn Lys Thr Asp Glu Lys Lys Ile Glu Glu Arg Lys Ala		
470	475	480
Gln Ile Ile Thr Glu Lys Thr Ser Pro Lys Thr Ser Asn Pro Phe		
485	490	495
Leu Val Ala Val Gln Asp Ser Glu Ala Asp Tyr Val Thr Thr Asp		
500	505	510

Thr	Leu	Ser	Lys	Val	Thr	Glu	Ala	Ala	Val	Ser	Asn	Met	Pro	Glu
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Gly	Leu	Thr	Pro	Asp	Leu	Val	Gln	Glu	Ala	Cys	Glu	Ser	Glu	Leu
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Asn	Glu	Ala	Thr	Gly	Thr	Lys	Ile	Ala	Tyr	Glu	Thr	Lys	Val	Asp
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Leu	Val	Gln	Thr	Ser	Glu	Ala	Ile	Gln	Glu	Ser	Leu	Tyr	Pro	Thr
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Ala	Gln	Leu	Cys	Pro	Ser	Phe	Glu	Glu	Ala	Glu	Ala	Thr	Pro	Ser
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Pro	Glu	Asn	Pro	Pro	Pro	Tyr	Glu	Glu	Ala	Met	Asn	Val	Ala	Leu
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Lys	Ala	Leu	Gly	Thr	Lys	Glu	Gly	Ile	Lys	Glu	Pro	Glu	Ser	Phe
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Asn	Ala	Ala	Val	Gln	Glu	Thr	Glu	Ala	Pro	Tyr	Ile	Ser	Ile	Ala
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Cys	Asp	Leu	Ile	Lys	Glu	Thr	Lys	Leu	Ser	Thr	Glu	Pro	Ser	Pro
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Asp	Phe	Ser	Asn	Tyr	Ser	Glu	Ile	Ala	Lys	Phe	Glu	Lys	Ser	Val
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Pro	Val	Asp	Leu	Phe	Ser	Asp	Asp	Ser	Ile	Pro	Glu	Val	Pro	Gln
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Thr	Gln	Glu	Glu	Ala	Val	Met	Leu	Met	Lys	Glu	Ser	Leu	Thr	Glu
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Val	Ser	Glu	Thr	Val	Ala	Gln	His	Lys	Glu	Glu	Arg	Leu	Ser	Ala
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Ser	Pro	Gln	Glu	Leu	Gly	Lys	Pro	Tyr	Leu	Glu	Ser	Phe	Gln	Pro
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Asn	Leu	His	Ser	Thr	Lys	Asp	Ala	Ala	Ser	Asn	Asp	Ile	Pro	Thr
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Leu	Thr	Lys	Lys	Glu	Lys	Ile	Ser	Leu	Gln	Met	Glu	Glu	Phe	Asn
				800					805					810

Thr Ala Ile Tyr Ser Asn Asp Asp Leu Leu Ser Ser Lys Glu Asp  
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 Lys Ile Lys Glu Ser Glu Thr Phe Ser Asp Ser Ser Pro Ile Glu  
 830 835 840  
 Ile Ile Asp Glu Phe Pro Thr Phe Val Ser Ala Lys Asp Asp Ser  
 845 850 855  
 Pro Lys Leu Ala Lys Glu Tyr Thr Asp Leu Glu Val Ser Asp Lys  
 860 865 870  
 Ser Glu Ile Ala Asn Ile Gln Ser Gly Ala Asp Ser Leu Pro Cys  
 875 880 885  
 Leu Glu Leu Pro Cys Asp Leu Ser Phe Lys Asn Ile Tyr Pro Lys  
 890 895 900  
 Asp Glu Val His Val Ser Asp Glu Phe Ser Glu Asn Arg Ser Ser  
 905 910 915  
 Val Ser Lys Ala Ser Ile Ser Pro Ser Asn Val Ser Ala Leu Glu  
 920 925 930  
 Pro Gln Thr Glu Met Gly Ser Ile Val Lys Ser Lys Ser Leu Thr  
 935 940 945  
 Lys Glu Ala Glu Lys Lys Leu Pro Ser Asp Thr Glu Lys Glu Asp  
 950 955 960  
 Arg Ser Leu Ser Ala Val Leu Ser Ala Glu Leu Ser Lys Thr Ser  
 965 970 975  
 Val Val Asp Leu Leu Tyr Trp Arg Asp Ile Lys Lys Thr Gly Val  
 980 985 990  
 Val Phe Gly Ala Ser Leu Phe Leu Leu Leu Ser Leu Thr Val Phe  
 995 1000 1005  
 Ser Ile Val Ser Val Thr Ala Tyr Ile Ala Leu Ala Leu Leu Ser  
 1010 1015 1020  
 Val Thr Ile Ser Phe Arg Ile Tyr Lys Gly Val Ile Gln Ala Ile  
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 Gln Lys Ser Asp Glu Gly His Pro Phe Arg Ala Tyr Leu Glu Ser  
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 Glu Val Ala Ile Ser Glu Glu Leu Val Gln Lys Tyr Ser Asn Ser  
 1055 1060 1065  
 Ala Leu Gly His Val Asn Ser Thr Ile Lys Glu Leu Arg Arg Leu  
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 Phe Leu Val Asp Asp Leu Val Asp Ser Leu Lys Phe Ala Val Leu  
 1085 1090 1095  
 Met Trp Val Phe Thr Tyr Val Gly Ala Leu Phe Asn Gly Leu Thr  
 1100 1105 1110  
 Leu Leu Ile Leu Ala Leu Ile Ser Leu Phe Ser Ile Pro Val Ile

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Tyr Glu Arg His Gln Val Gln Ile Asp His Tyr Leu Gly Leu Ala			
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Pro Glu Asp Glu Glu Glu Glu Glu Glu Glu Glu Asp Glu			
35	40	45	
Asp Glu Asp Leu Glu Glu Leu Glu Val Leu Glu Arg Lys Pro Ala			
50	55	60	
Ala Gly Leu Ser Ala Ala Pro Val Pro Thr Ala Pro Ala Ala Gly			
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Ala Pro Leu Met Asp Phe Gly Asn Glu Phe Val Pro Pro Ala Pro			
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Arg Gly Pro Leu Pro Ala Ala Pro Pro Val Ala Pro Glu Arg Gln			
95	100	105	
Pro Ser Trp Asp Pro Ser Pro Val Ser Ser Thr Val Pro Ala Pro			
110	115	120	
Ser Pro Leu Ser Ala Ala Ala Val Ser Pro Ser Lys Leu Pro Glu			
125	130	135	
Asp Asp Glu Pro Pro Ala Arg Pro Pro Pro Pro Pro Ala Ser			
140	145	150	
Val Ser Pro Gln Ala Glu Pro Val Trp Thr Pro Pro Ala Pro Ala			
155	160	165	
Pro Ala Ala Pro Pro Ser Thr Pro Ala Ala Pro Lys Arg Arg Gly			
170	175	180	
Ser Ser Gly Ser Val Asp Glu Thr Leu Phe Ala Leu Pro Ala Ala			
185	190	195	

Ser Glu Pro Val Ile Arg Ser Ser Ala Glu Asn Met Glu Leu Lys  
 200 205 210  
 Glu Gln Pro Gly Asn Thr Ile Ser Ala Gly Gln Glu Asp Phe Pro  
 215 220 225  
 Ser Val Leu Leu Glu Thr Ala Ala Ser Leu Pro Ser Leu Ser Pro  
 230 235 240  
 Leu Ser Ala Ala Ser Phe Lys Glu His Glu Tyr Leu Glu Asn Leu  
 245 250 255  
 Ser Thr Val Leu Pro Thr Glu Gly Thr Leu Gln Glu Asn Val Ser  
 260 265 270  
 Glu Ala Ser Lys Glu Val Ser Glu Lys Ala Lys Thr Leu Leu Ile  
 275 280 285  
 Asp Arg Asp Leu Thr Glu Phe Ser Glu Leu Glu Tyr Ser Glu Met  
 290 295 300  
 Gly Ser Ser Phe Ser Val Ser Pro Lys Ala Glu Ser Ala Val Ile  
 305 310 315  
 Val Ala Asn Pro Arg Glu Glu Ile Ile Val Lys Asn Lys Asp Glu  
 320 325 330  
 Glu Glu Lys Leu Val Ser Asn Asn Ile Leu His Asn Gln Gln Glu  
 335 340 345  
 Leu Pro Thr Ala Leu Thr Lys Leu Val Lys Glu Asp Glu Val Val  
 350 355 360  
 Ser Ser Glu Lys Ala Lys Asp Ser Phe Asn Glu Lys Arg Val Ala  
 365 370 385  
 Val Glu Ala Pro Met Arg Glu Glu Tyr Ala Asp Phe Lys Pro Phe  
 380 385 390  
 Glu Arg Val Trp Glu Val Lys Asp Ser Lys Glu Asp Ser Asp Met  
 395 400 405  
 Leu Ala Ala Gly Gly Lys Ile Glu Ser Asn Leu Glu Ser Lys Val  
 410 415 420  
 Asp Lys Lys Cys Phe Ala Asp Ser Leu Glu Gln Thr Asn His Glu  
 425 430 435  
 Lys Asn Ser Glu Ser Ser Asn Asp Asp Thr Ser Phe Pro Ser Thr  
 440 445 450  
 Pro Glu Gly Ile Lys Asp Arg Pro Gly Ala Tyr Ile Thr Cys Ala  
 455 460 465  
 Pro Phe Asn Pro Ala Ala Thr Glu Ser Ile Ala Thr Asn Ile Phe  
 470 475 480  
 Pro Leu Leu Gly Asp Pro Thr Ser Glu Asn Lys Thr Asp Glu Lys  
 485 490 495  
 Lys Ile Glu Glu Lys Lys Ala Gln Ile Val Thr Glu Lys Asn Thr

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Ser Thr Lys Thr Ser Asn Pro Phe Leu Val Ala Ala Gln Glu Ser		
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Glu Thr Asp Tyr Val Thr Thr Asp Asn Leu Thr Lys Val Thr Glu		
530	535	540
Glu Val Val Ala Asn Met Pro Glu Gly Leu Thr Pro Asp Leu Val		
545	550	555
Gln Glu Ala Cys Glu Ser Glu Leu Asn Glu Val Thr Gly Thr Lys		
560	565	570
Ile Ala Tyr Glu Thr Lys Met Asp Leu Val Gln Thr Ser Glu Val		
575	580	585
Met Gln Glu Ser Leu Tyr Pro Ala Ala Gln Leu Cys Pro Ser Phe		
590	595	600
Glu Glu Ser Glu Ala Thr Pro Ser Pro Val Leu Pro Asp Ile Val		
605	610	615
Met Glu Ala Pro Leu Asn Ser Ala Val Pro Ser Ala Gly Ala Ser		
620	625	630
Val Ile Gln Pro Ser Ser Ser Pro Leu Glu Ala Ser Ser Val Gln		
635	640	645
Tyr Glu Ser Ile Lys His Glu Pro Glu Asn Pro Pro Pro Tyr Glu		
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Glu Ala Met Ser Val Ser Leu Lys Lys Val Ser Gly Ile Lys Glu		
665	670	675
Glu Ile Lys Glu Pro Glu Asn Ile Asn Ala Ala Leu Gln Glu Thr		
680	685	690
Glu Ala Pro Tyr Ile Ser Ile Ala Cys Asp Leu Ile Lys Glu Thr		
695	700	705
Lys Leu Ser Ala Glu Pro Ala Pro Glu Phe Ser Asp Tyr Ser Glu		
710	715	720
Met Ala Lys Val Glu Gln Pro Val Pro Asp His Ser Glu Leu Val		
725	730	735
Glu Asp Ser Ser Pro Asp Ser Glu Pro Val Asp Leu Phe Ser Asp		
740	745	750
Asp Ser Ile Pro Asp Val Pro Gln Lys Gln Asp Glu Thr Val Met		
755	760	765
Leu Val Lys Glu Ser Leu Thr Glu Thr Ser Phe Glu Ser Met Ile		
770	775	780
Glu Tyr Glu Gln Lys Glu Lys Leu Ser Ala Leu Pro Pro Glu Gly		
785	790	795
Gly Lys Pro Tyr Leu Glu Ser Phe Lys Leu Ser Leu Asp Asn Thr		
800	805	810

Lys	Asp	Thr	Leu	Leu	Pro	Asp	Glu	Val	Ser	Thr	Leu	Ser	Lys	Lys
815														825
Glu	Lys	Ile	Pro	Ile	Gln	Met	Glu	Glu	Leu	Ser	Thr	Ala	Val	Tyr
830														840
Ser	Asn	Asp	Asp	Leu	Phe	Ile	Ser	Lys	Glu	Ala	Gln	Ile	Arg	Glu
845														855
Thr	Glu	Thr	Phe	Ser	Asp	Ser	Ser	Pro	Ile	Glu	Ile	Ile	Asp	Glu
860														870
Phe	Pro	Thr	Leu	Ile	Ser	Ser	Lys	Thr	Asp	Ser	Phe	Ser	Lys	Leu
875														885
Ala	Arg	Glu	Tyr	Thr	Asp	Leu	Glu	Val	Ser	His	Lys	Ser	Glu	Ile
890														900
Ala	Gln	Ala	Pro	Asp	Gly	Ala	Gly	Ser	Leu	Pro	Cys	Thr	Glu	Leu
905														915
Pro	His	Asp	Leu	Ser	Leu	Lys	Asn	Ile	Gln	Pro	Lys	Val	Glu	Glu
920														930
Lys	Ile	Ser	Phe	Ser	Asp	Asp	Phe	Ser	Lys	Asn	Gly	Ser	Ala	Thr
935														945
Ser	Lys	Val	Leu	Leu	Leu	Pro	Pro	Asp	Val	Ser	Ala	Leu	Ala	Thr
950														960
Gln	Ala	Glu	Ile	Glu	Ser	Ile	Val	Lys	Pro	Lys	Val	Leu	Val	Lys
965														975
Glu	Ala	Glu	Lys	Lys	Leu	Pro	Ser	Asp	Thr	Glu	Lys	Glu	Asp	Arg
980														990
Ser	Pro	Ser	Ala	Ile	Phe	Ser	Ala	Glu	Leu	Ser	Lys	Thr	Ser	Val
995														1005
Val	Asp	Leu	Leu	Tyr	Trp	Arg	Asp	Ile	Lys	Lys	Thr	Gly	Val	Val
1010														1020
Phe	Gly	Ala	Ser	Leu	Phe	Leu	Leu	Leu	Ser	Leu	Thr	Val	Phe	Ser
1025														1035
Ile	Val	Ser	Val	Thr	Ala	Tyr	Ile	Ala	Leu	Ala	Leu	Leu	Ser	Val
1040														1050
Thr	Ile	Ser	Phe	Arg	Ile	Tyr	Lys	Gly	Val	Ile	Gln	Ala	Ile	Gln
1055														1065
Lys	Ser	Asp	Glu	Gly	His	Pro	Phe	Arg	Ala	Tyr	Leu	Glu	Ser	Glu
1070														1080
Val	Ala	Ile	Ser	Glu	Glu	Leu	Val	Gln	Lys	Tyr	Ser	Asn	Ser	Ala
1085														1095
Leu	Gly	His	Val	Asn	Cys	Thr	Ile	Lys	Glu	Leu	Arg	Arg	Leu	Phe
1100														1110

Leu Val Asp Asp Leu Val Asp Ser Leu Lys Phe Ala Val Leu Met  
                   1115                  1120                  1125  
 Trp Val Phe Thr Tyr Val Gly Ala Leu Phe Asn Gly Leu Thr Leu  
                   1130                  1135                  1140  
 Leu Ile Leu Ala Leu Ile Ser Leu Phe Ser Val Pro Val Ile Tyr  
                   1145                  1150                  1155  
 Glu Arg His Gln Ala Gln Ile Asp His Tyr Leu Gly Leu Ala Asn  
                   1160                  1165                  1170  
 Lys Asn Val Lys Asp Ala Met Ala Lys Ile Gln Ala Lys Ile Pro  
                   1175                  1180                  1185  
 Gly Leu Lys Arg Lys Ala Glu  
                   1190

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<222> (43) ... (48)
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<220>
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20          25          .          30

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35          40          .          45

Glu Trp Ile Gly Asp Ile Tyr Pro Gly Gly Tyr Thr Asn Tyr
50          55          .          60

Asn Glu Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Thr Ser
65          70          .          75

Ser Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp
80          85          .          90

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Ser Ala Val Tyr Phe Cys Ala Arg Phe Tyr Tyr Gly Ser Ser Tyr  
95 100 105

Trp Tyr Phe Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser  
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Ser

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20 25 30

Gly Ala Leu Asn Trp Tyr Gln Arg Lys Gln Gly Lys Ser Pro Glu  
                  35                        40                        45

Leu Leu Ile Tyr Gly Ala Thr Asn Leu Ala Asp Gly Met Ser Ser  
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Arg Gln Tyr Ser Leu Lys Ile  
65 70 75

Ser Ser Leu His Pro Asp Asp Val Ala Thr Tyr Tyr Cys Gln Asn  
80 85 90

Ile Asn Arg Val Pro Val Thr Phe Gly Ala Gly Thr Lys Leu Glu  
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## Ile Lys

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<221> CDS

<222> (85)...(2208)

<223> mature truncated Nogo-A

<220>

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<222> (2209)...(2238)

<223> Strep-tag II affinity tag

<400> 13

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			-21	-20						-15					
gca	gtg	gca	ctg	gct	ggt	ttc	gct	acc	gta	gcg	cag	gcc	tct	ttt	90
Ala	Val	Ala	Leu	Ala	Gly	Phe	Ala	Thr	Val	Ala	Gln	Ala	Ser	Phe	
-10						-5						-1	1		
aaa	gaa	cat	gga	tac	ctt	ggt	aac	tta	tca	gca	gtg	tca	tcc	tca	135
Lys	Glu	His	Gly	Tyr	Leu	Gly	Asn	Leu	Ser	Ala	Val	Ser	Ser	Ser	
5							10					15			
gaa	gga	aca	att	gaa	gaa	act	tta	aat	gaa	gct	tct	aaa	gag	ttg	180
Glu	Gly	Thr	Ile	Glu	Glu	Thr	Leu	Asn	Glu	Ala	Ser	Lys	Glu	Leu	
20							25					30			
cca	gag	agg	gca	aca	aat	cca	ttt	gta	aat	aga	gat	tta	gca	gaa	225
Pro	Glu	Arg	Ala	Thr	Asn	Pro	Phe	Val	Asn	Arg	Asp	Leu	Ala	Glu	
35							40					45			
ttt	tca	gaa	tta	gaa	tat	tca	gaa	atg	gga	tca	tct	ttt	aaa	ggc	270
Phe	Ser	Glu	Leu	Glu	Tyr	Ser	Glu	Met	Gly	Ser	Ser	Phe	Lys	Gly	
50							55					60			
tcc	cca	aaa	gga	gag	tca	gcc	ata	tta	gta	gaa	aac	act	aag	gaa	315
Ser	Pro	Lys	Gly	Glu	Ser	Ala	Ile	Leu	Val	Glu	Asn	Thr	Lys	Glu	
65							70					75			
gaa	gta	att	gtg	agg	agt	aaa	gac	aaa	gag	gat	tta	gtt	tgt	agt	360
Glu	Val	Ile	Val	Arg	Ser	Lys	Asp	Lys	Glu	Asp	Leu	Val	Cys	Ser	
80							85					90			
gca	gcc	ctt	cac	agt	cca	caa	gaa	tca	cct	gtg	ggt	aaa	gaa	gac	405
Ala	Ala	Leu	His	Ser	Pro	Gln	Glu	Ser	Pro	Val	Gly	Lys	Glu	Asp	
95							100					105			
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Arg	Val	Val	Ser	Pro	Glu	Lys	Thr	Met	Asp	Ile	Phe	Asn	Glu	Met	
110							115					120			
cag	atg	tca	gta	gta	gca	cct	gtg	agg	gaa	gag	tat	gca	gac	ttt	495
Gln	Met	Ser	Val	Val	Ala	Pro	Val	Arg	Glu	Glu	Tyr	Ala	Asp	Phe	
125							130					135			

aag cca ttt gaa caa gca tgg gaa gtg aaa gat act tat gag gga 540  
 Lys Pro Phe Glu Gln Ala Trp Glu Val Lys Asp Thr Tyr Glu Gly  
 140 145 150

agt agg gat gtg ctg gct gct aga gct aat gtg gaa agt aaa gtg 585  
 Ser Arg Asp Val Leu Ala Ala Arg Ala Asn Val Glu Ser Lys Val  
 155 160 165

gac aga aaa tgc ttg gaa gat agc ctg gag caa aaa agt ctt ggg 630  
 Asp Arg Lys Cys Leu Glu Asp Ser Leu Glu Gln Lys Ser Leu Gly  
 170 175 180

aag gat agt gaa ggc aga aat gag gat gct tct ttc ccc agt acc 675  
 Lys Asp Ser Glu Gly Arg Asn Glu Asp Ala Ser Phe Pro Ser Thr  
 185 190 195

cca gaa cct gtg aag gac agc tcc aga gca tat att acc tgt gct 720  
 Pro Glu Pro Val Lys Asp Ser Ser Arg Ala Tyr Ile Thr Cys Ala  
 200 205 210

tcc ttt acc tca gca acc gaa agc acc aca gca aac act ttc cct 765  
 Ser Phe Thr Ser Ala Thr Glu Ser Thr Thr Ala Asn Thr Phe Pro  
 215 220 225

ttg tta gaa gat cat act tca gaa aat aaa aca gat gaa aaa aaa 810  
 Leu Leu Glu Asp His Thr Ser Glu Asn Lys Thr Asp Glu Lys Lys  
 230 235 240

ata gaa gaa agg aag gcc caa att ata aca gag aag act agc ccc 855  
 Ile Glu Glu Arg Lys Ala Gln Ile Ile Thr Glu Lys Thr Ser Pro  
 245 250 255

aaa acg tca aat cct ttc ctt gta gca gta cag gat tct gag gca 900  
 Lys Thr Ser Asn Pro Phe Leu Val Ala Val Gln Asp Ser Glu Ala  
 260 265 270

gat tat gtt aca aca gat acc tta tca aag gtg act gag gca gca 945  
 Asp Tyr Val Thr Asp Thr Leu Ser Lys Val Thr Glu Ala Ala  
 275 280 285

gtg tca aac atg cct gaa ggt ctg acg cca gat tta gtt cag gaa 990  
 Val Ser Asn Met Pro Glu Gly Leu Thr Pro Asp Leu Val Gln Glu  
 290 295 300

gca tgt gaa agt gaa ctg aat gaa gcc aca ggt aca aag att gct 1035  
 Ala Cys Glu Ser Glu Leu Asn Glu Ala Thr Gly Thr Lys Ile Ala  
 305 310 315

tat gaa aca aaa gtg gac ttg gtc caa aca tca gaa gct ata caa 1080  
 Tyr Glu Thr Lys Val Asp Leu Val Gln Thr Ser Glu Ala Ile Gln  
 320 325 330

gaa tca ctt tac ccc aca gca cag ctt tgc cca tca ttt gag gaa 1125  
 Glu Ser Leu Tyr Pro Thr Ala Gln Leu Cys Pro Ser Phe Glu Glu  
 335 340 345

gct gaa gca act ccg tca cca gtt ttg cct gat att gtt atg gaa 1170  
 Ala Glu Ala Thr Pro Ser Pro Val Leu Pro Asp Ile Val Met Glu  
 350 355 360

gca cca tta aat tct ctc ctt cca agc gct ggt gct tct gta gtg 1215

Ala Pro Leu Asn Ser Leu Leu Pro Ser Ala Gly Ala Ser Val Val  
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 cag ccc agt gta tcc cca ctg gaa gca cct cct cca gtt agt tat 1260  
 Gln Pro Ser Val Ser Pro Leu Glu Ala Pro Pro Pro Val Ser Tyr  
 380 385 390  
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 Asp Ser Ile Lys Leu Glu Pro Glu Asn Pro Pro Tyr Glu Glu  
 395 400 405  
 gcc atg aat gta gca cta aaa gct ttg gga aca aag gaa gga ata 1350  
 Ala Met Asn Val Ala Leu Lys Ala Leu Gly Thr Lys Glu Gly Ile  
 410 415 420  
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 Lys Glu Pro Glu Ser Phe Asn Ala Ala Val Gln Glu Thr Glu Ala  
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 Pro Tyr Ile Ser Ile Ala Cys Asp Leu Ile Lys Glu Thr Lys Leu  
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 455 460 465  
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 Lys Phe Glu Lys Ser Val Pro Glu His Ala Glu Leu Val Glu Asp  
 470 475 480  
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 Ile Pro Glu Val Pro Gln Thr Gln Glu Glu Ala Val Met Leu Met  
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 aag gag agt ctc act gaa gtg tct gag aca gta gcc cag cac aaa 1665  
 Lys Glu Ser Leu Thr Glu Val Ser Glu Thr Val Ala Gln His Lys  
 515 520 525  
 gag gag aga ctt agt gcc tca cct cag gag cta gga aag cca tat 1710  
 Glu Glu Arg Leu Ser Ala Ser Pro Gln Glu Leu Gly Lys Pro Tyr  
 530 535 540  
 tta gag tct ttt cag ccc aat tta cat agt aca aaa gat gct gca 1755  
 Leu Glu Ser Phe Gln Pro Asn Leu His Ser Thr Lys Asp Ala Ala  
 545 550 555  
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 Ser Asn Asp Ile Pro Thr Leu Thr Lys Lys Glu Lys Ile Ser Leu  
 560 565 570  
 caa atg gaa gag ttt aat act gca att tat tca aat gat gac tta 1845  
 Gln Met Glu Glu Phe Asn Thr Ala Ile Tyr Ser Asn Asp Asp Leu  
 575 580 585  
 ctt tct tct aag gaa gac aaa ata aaa gaa agt gaa aca ttt tca 1890  
 Leu Ser Ser Lys Glu Asp Lys Ile Lys Glu Ser Glu Thr Phe Ser

590	595	600
gat tca tct ccg att gag ata ata gat gaa ttt ccc acg ttt gtc 1935		
Asp Ser Ser Pro Ile Glu Ile Ile Asp Glu Phe Pro Thr Phe Val		
605	610	615
agt gct aaa gat gat tct cct aaa tta gcc aag gag tac act gat 1980		
Ser Ala Lys Asp Asp Ser Pro Lys Leu Ala Lys Glu Tyr Thr Asp		
620	625	630
cta gaa gta tcc gac aaa agt gaa att gct aat atc caa agc ggg 2025		
Leu Glu Val Ser Asp Lys Ser Glu Ile Ala Asn Ile Gln Ser Gly		
635	640	645
gca gat tca ttg cct tgc tta gaa ttg ccc tgt gac ctt tct ttc 2070		
Ala Asp Ser Leu Pro Cys Leu Glu Leu Pro Cys Asp Leu Ser Phe		
650	655	660
aag aat ata tat cct aaa gat gaa gta cat gtt tca gat gaa ttc 2115		
Lys Asn Ile Tyr Pro Lys Asp Glu Val His Val Ser Asp Glu Phe		
665	670	675
tcc gaa aat agg tcc agt gta tct aag gca tcc ata tcg cct tca 2160		
Ser Glu Asn Arg Ser Ser Val Ser Lys Ala Ser Ile Ser Pro Ser		
680	685	690
aat gtc tct gct ttg gaa cct cag aca gaa atg ggc agc ata gtt 2205		
Asn Val Ser Ala Leu Glu Pro Gln Thr Glu Met Gly Ser Ile Val		
695	700	705
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          -21 -20           -15

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Ala Val Ala Leu Ala Gly Phe Ala Thr Val Ala Gln Ala Glu Thr
          -10            -5           -1    1

ctt ttt gct ctt cct gct gca tct gag cct gtg ata ccc tcc tct 135
Leu Phe Ala Leu Pro Ala Ala Ser Glu Pro Val Ile Pro Ser Ser
          5             10           15

gca gaa aaa att atg gat ttg atg gag cag cca ggt aac act gtt 180
Ala Glu Lys Ile Met Asp Leu Met Glu Gln Pro Gly Asn Thr Val
          20            25           30

tcg tct ggt caa gag gat ttc cca tct gtc ctg ctt gaa act gct 225
Ser Ser Gly Gln Glu Asp Phe Pro Ser Val Leu Leu Glu Thr Ala
          35            40           45

gcc tct ctt cct tct cta tct cct ctc tca act gtt tct ttt aaa 270
Ala Ser Leu Pro Ser Leu Ser Pro Leu Ser Thr Val Ser Phe Lys
          50            55           60

gaa cat gga tac ctt ggt aac tta tca gca gtg tca tcc tca gaa 315
Glu His Gly Tyr Leu Gly Asn Leu Ser Ala Val Ser Ser Glu
          65            70           75

gga aca att gaa gaa act tta aat gaa gct tct aaa gag ttg cca 360
Gly Thr Ile Glu Glu Thr Leu Asn Glu Ala Ser Lys Glu Leu Pro
          80            85           90

gag agg gca aca aat cca ttt gta aat aga gat tta gca gaa ttt 405
Glu Arg Ala Thr Asn Pro Phe Val Asn Arg Asp Leu Ala Glu Phe
          95            100          105

tca gaa tta gaa tat tca gaa atg gga tca tct ttt aaa ggc tcc 450
Ser Glu Leu Glu Tyr Ser Glu Met Gly Ser Ser Phe Lys Gly Ser
          110           115          120

cca aaa gga gag tca gcc ata tta gta gaa aac act aag gaa gaa 495
Pro Lys Gly Glu Ser Ala Ile Leu Val Glu Asn Thr Lys Glu Glu
          125           130          135

gta att gtg agg agt aaa gac aaa gag gat tta gtt tgt agt gca 540
Val Ile Val Arg Ser Lys Asp Lys Glu Asp Leu Val Cys Ser Ala
          140           145          150

gcc ctt cac agt cca caa gaa tca cct gtg ggt aaa gaa gac aga 585
Ala Leu His Ser Pro Gln Glu Ser Pro Val Gly Lys Glu Asp Arg
          155           160          165

gtt gtg tct cca gaa aag aca atg gac att ttt aat gaa atg cag 630
Val Val Ser Pro Glu Lys Thr Met Asp Ile Phe Asn Glu Met Gln
          170           175          180

atg tca gta gta gca cct gtg agg gaa gag tat gca gac ttt aag 675

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Met Ser Val Val Ala Pro Val Arg Glu Glu Tyr Ala Asp Phe Lys  
 185 190 195  
 cca ttt gaa caa gca tgg gaa gtg aaa gat act tat gag gga agt 720  
 Pro Phe Glu Gln Ala Trp Glu Val Lys Asp Thr Tyr Glu Gly Ser  
 200 205 210  
 agg gat gtg ctg gct gct aga gct aat gtg gaa agt aaa gtg gac 765  
 Arg Asp Val Leu Ala Ala Arg Ala Asn Val Glu Ser Lys Val Asp  
 215 220 225  
 aga aaa tgc ttg gaa gat agc ctg gag caa aaa agt ctt ggg aag 810  
 Arg Lys Cys Leu Glu Asp Ser Leu Glu Gln Lys Ser Leu Gly Lys  
 230 235 240  
 gat agt gaa ggc aga aat gag gat gct tct ttc ccc agt acc cca 855  
 Asp Ser Glu Gly Arg Asn Glu Asp Ala Ser Phe Pro Ser Thr Pro  
 245 250 255  
 gaa cct gtg aag gac agc tcc aga gca tat att acc tgt gct tcc 900  
 Glu Pro Val Lys Asp Ser Ser Arg Ala Tyr Ile Thr Cys Ala Ser  
 260 265 270  
 ttt acc tca gca acc gaa agc acc aca gca aac act ttc cct ttg 945  
 Phe Thr Ser Ala Thr Glu Ser Thr Ala Asn Thr Phe Pro Leu  
 275 280 285  
 tta gaa gat cat act tca gaa aat aaa aca gat gaa aaa aaa ata 990  
 Leu Glu Asp His Thr Ser Glu Asn Lys Thr Asp Glu Lys Lys Ile  
 290 295 300  
 gaa gaa agg aag gcc caa att ata aca gag aag act agc ccc aaa 1035  
 Glu Glu Arg Lys Ala Gln Ile Ile Thr Glu Lys Thr Ser Pro Lys  
 305 310 315  
 acg tca aat cct ttc ctt gta gca gta cag gat tct gag gca gat 1080  
 Thr Ser Asn Pro Phe Leu Val Ala Val Gln Asp Ser Glu Ala Asp  
 320 325 330  
 tat gtt aca aca gat acc tta tca aag gtg act gag gca gca gtg 1125  
 Tyr Val Thr Thr Asp Thr Leu Ser Lys Val Thr Glu Ala Ala Val  
 335 340 345  
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 Ser Asn Met Pro Glu Gly Leu Thr Pro Asp Leu Val Gln Glu Ala  
 350 355 360  
 tgt gaa agt gaa ctg aat gaa gcc aca ggt aca aag att gct tat 1215  
 Cys Glu Ser Glu Leu Asn Glu Ala Thr Gly Thr Lys Ile Ala Tyr  
 365 370 375  
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 Glu Thr Lys Val Asp Leu Val Gln Thr Ser Glu Ala Ile Gln Glu  
 380 385 390  
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 Ser Leu Tyr Pro Thr Ala Gln Leu Cys Pro Ser Phe Glu Glu Ala  
 395 400 405  
 gaa gca act ccg tca cca gtt ttg cct gat att gtt atg gaa gca 1350  
 Glu Ala Thr Pro Ser Pro Val Leu Pro Asp Ile Val Met Glu Ala

410	415	420												
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Pro	Leu	Asn	Ser	Leu	Leu	Pro	Ser	Ala	Gly	Ala	Ser	Val	Val	Gln
425							430					435		
ccc agt gta tcc cca ctg gaa gca cct cct cca gtt agt tat gac 1440														
Pro	Ser	Val	Ser	Pro	Leu	Glu	Ala	Pro	Pro	Pro	Val	Ser	Tyr	Asp
440							445					450		
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Ser	Ile	Lys	Leu	Glu	Pro	Glu	Asn	Pro	Pro	Tyr	Glu	Glu	Ala	
455							460					465		
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Met	Asn	Val	Ala	Leu	Lys	Ala	Leu	Gly	Thr	Lys	Glu	Gly	Ile	Lys
470							475					480		
gag cct gaa agt ttt aat gca gct gtt cag gaa aca gaa gct cct 1575														
Glu	Pro	Glu	Ser	Phe	Asn	Ala	Ala	Val	Gln	Glu	Thr	Glu	Ala	Pro
485							490					495		
tat ata tcc att gcg tgt gat tta att aaa gaa aca aag ctc tcc 1620														
Tyr	Ile	Ser	Ile	Ala	Cys	Asp	Leu	Ile	Lys	Glu	Thr	Lys	Leu	Ser
500							505					510		
act gag cca agt cca gat ttc tct aat tat tca gaa ata gca aaa 1665														
Thr	Glu	Pro	Ser	Pro	Asp	Phe	Ser	Asn	Tyr	Ser	Glu	Ile	Ala	Lys
515							520					525		
ttc gag aag tcg gtg ccc gaa cac gct gag cta gtg gag gat tcc 1710														
Phe	Glu	Lys	Ser	Val	Pro	Glu	His	Ala	Glu	Leu	Val	Glu	Asp	Ser
530							535					540		
tca cct gaa tct gaa cca gtt gac tta ttt agt gat gat tcg att 1755														
Ser	Pro	Glu	Ser	Glu	Pro	Val	Asp	Leu	Phe	Ser	Asp	Asp	Ser	Ile
545							550					555		
cct gaa gtc cca caa aca caa gag gag gct gtg atg ctc atg aag 1800														
Pro	Glu	Val	Pro	Gln	Thr	Gln	Glu	Glu	Ala	Val	Met	Leu	Met	Lys
560							565					570		
gag agt ctc act gaa gtg tct gag aca gta gcc cag cac aaa gag 1845														
Glu	Ser	Leu	Thr	Glu	Val	Ser	Glu	Thr	Val	Ala	Gln	His	Lys	Glu
575							580					585		
gag aga ctt agt gcc tca cct cag gag cta gga aag cca tat tta 1890														
Glu	Arg	Leu	Ser	Ala	Ser	Pro	Gln	Glu	Leu	Gly	Lys	Pro	Tyr	Leu
590							595					600		
gag tct ttt cag ccc aat tta cat agt aca aaa gat gct gca tct 1935														
Glu	Ser	Phe	Gln	Pro	Asn	Leu	His	Ser	Thr	Lys	Asp	Ala	Ala	Ser
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aat gac att cca aca ttg acc aaa aag gag aaa att tct ttg caa 1980														
Asn	Asp	Ile	Pro	Thr	Leu	Thr	Lys	Lys	Glu	Lys	Ile	Ser	Leu	Gln
620							625					630		
atg gaa gag ttt aat act gca att tat tca aat gat gac tta ctt 2025														
Met	Glu	Glu	Phe	Asn	Thr	Ala	Ile	Tyr	Ser	Asn	Asp	Asp	Leu	Leu
635							640					645		

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tct tct aag gaa gac aaa ata aaa gaa agt gaa aca ttt tca gat 2070
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650 655 660

tca tct ccg att gag ata ata gat gaa ttt ccc acg ttt gtc agt 2115
Ser Ser Pro Ile Glu Ile Ile Asp Glu Phe Pro Thr Phe Val Ser
665 670 675

gct aaa gat gat tct cct aaa tta gcc aag gag tac act gat cta 2160
Ala Lys Asp Asp Ser Pro Lys Leu Ala Lys Glu Tyr Thr Asp Leu
680 685 690

gaa gta tcc gac aaa agt gaa att gct aat atc caa agc ggg gca 2205
Glu Val Ser Asp Lys Ser Glu Ile Ala Asn Ile Gln Ser Gly Ala
695 700 705

gat tca ttg cct tgc tta gaa ttg ccc tgt gac ctt tct ttc aag 2250
Asp Ser Leu Pro Cys Leu Glu Leu Pro Cys Asp Leu Ser Phe Lys
710 715 720

aat ata tat cct aaa gat gaa gta cat gtt tca gat gaa ttc tcc 2295
Asn Ile Tyr Pro Lys Asp Glu Val His Val Ser Asp Glu Phe Ser
725 730 735

gaa aat agg tcc agt gta tct aag gca tcc ata tcg cct tca aat 2340
Glu Asn Arg Ser Ser Val Ser Lys Ala Ser Ile Ser Pro Ser Asn
740 745 750

gtc tct gct ttg gaa cct cag aca gaa atg ggc agc ata gtt aaa 2385
Val Ser Ala Leu Glu Pro Gln Thr Glu Met Gly Ser Ile Val Lys
755 760 765

agc gct tgg cgt cac ccg cag ttc ggt ggt taa taa gctt 2425
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			-21	-20						-15	
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Ala	Val	Ala	Leu	Ala	Gly	Phe	Ala	Thr	Val	Ala	Gln
-10											Ser
											-1
tgg	agc	cac	ccg	cag	ttc	gaa	aaa	ggc	gcc	tct	135
Trp	Ser	His	Pro	Gln	Phe	Glu	Lys	Gly	Ala	Ser	Phe
5											Lys
											Glu
											His
gga	tac	ctt	ggt	aac	tta	tca	gca	gtg	tca	tcc	180
Gly	Tyr	Leu	Gly	Asn	Leu	Ser	Ala	Val	Ser	Ser	Glu
20											Gly
											Thr
att	gaa	gaa	act	tta	aat	gaa	gct	tct	aaa	gag	225
Ile	Glu	Glu	Thr	Leu	Asn	Glu	Ala	Ser	Lys	Glu	Arg
35											45
gca	aca	aat	cca	ttt	gta	aat	aga	gat	tta	gca	270
Ala	Thr	Asn	Pro	Phe	Val	Asn	Arg	Asp	Leu	Ala	Phe
50											Ser
											Glu
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Leu	Glu	Tyr	Ser	Glu	Met	Gly	Ser	Ser	Phe	Gly	Pro
65											Lys
											75
gga	gag	tca	gcc	ata	tta	gta	gaa	aac	act	aag	360
Gly	Glu	Ser	Ala	Ile	Leu	Val	Glu	Asn	Thr	Lys	Glu
80											Val
											Ile
gtg	agg	agt	aaa	gac	aaa	gag	gat	tta	gtt	tgt	405
Val	Arg	Ser	Lys	Asp	Lys	Glu	Asp	Leu	Val	Cys	Ala
95											Leu
cac	agt	cca	caa	gaa	tca	cct	gtg	ggt	aaa	gaa	450
His	Ser	Pro	Gln	Glu	Ser	Pro	Val	Gly	Lys	Glu	Arg
110											Val
											Val
tct	cca	gaa	aag	aca	atg	gac	att	ttt	aat	gaa	495
Ser	Pro	Glu	Lys	Thr	Met	Asp	Ile	Phe	Asn	Glu	Met
125											Ser
											135
gta	gta	gca	cct	gtg	agg	gaa	gag	tat	gca	gac	540
Val	Val	Ala	Pro	Val	Arg	Glu	Glu	Tyr	Ala	Asp	Phe
140											Pro
											Phe
											150

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gtg ctg gct aga gct aat gtg gaa agt aaa gtg gac aga aaa 630  
 Val Leu Ala Ala Arg Ala Asn Val Glu Ser Lys Val Asp Arg Lys  
 170 175 180

tgc ttg gaa gat agc ctg gag caa aaa agt ctt ggg aag gat agt 675  
 Cys Leu Glu Asp Ser Leu Glu Gln Lys Ser Leu Gly Lys Asp Ser  
 185 190 195

gaa ggc aga aat gag gat gct tct ttc ccc agt acc cca gaa cct 720  
 Glu Gly Arg Asn Glu Asp Ala Ser Phe Pro Ser Thr Pro Glu Pro  
 200 205 210

gtg aag gac agc tcc aga gca tat att acc tgt gct tcc ttt acc 765  
 Val Lys Asp Ser Ser Arg Ala Tyr Ile Thr Cys Ala Ser Phe Thr  
 215 220 225

tca gca acc gaa agc acc aca gca aac act ttc cct ttg tta gaa 810  
 Ser Ala Thr Glu Ser Thr Ala Asn Thr Phe Pro Leu Leu Glu  
 230 235 240

gat cat act tca gaa aat aaa aca gat gaa aaa aaa ata gaa gaa 855  
 Asp His Thr Ser Glu Asn Lys Thr Asp Glu Lys Lys Ile Glu Glu  
 245 250 255

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 Arg Lys Ala Gln Ile Ile Thr Glu Lys Thr Ser Pro Lys Thr Ser  
 260 265 270

aat cct ttc ctt gta gca gta cag gat tct gag gca gat tat gtt 945  
 Asn Pro Phe Leu Val Ala Val Gln Asp Ser Glu Ala Asp Tyr Val  
 275 280 285

aca aca gat acc tta tca aag gtg act gag gca gca gtg tca aac 990  
 Thr Thr Asp Thr Leu Ser Lys Val Thr Glu Ala Ala Val Ser Asn  
 290 295 300

atg cct gaa ggt ctg acg cca gat tta gtt cag gaa gca tgt gaa 1035  
 Met Pro Glu Gly Leu Thr Pro Asp Leu Val Gln Glu Ala Cys Glu  
 305 310 315

agt gaa ctg aat gaa gcc aca ggt aca aag att gct tat gaa aca 1080  
 Ser Glu Leu Asn Glu Ala Thr Gly Thr Lys Ile Ala Tyr Glu Thr  
 320 325 330

aaa gtg gac ttg gtc caa aca tca gaa gct ata caa gaa tca ctt 1125  
 Lys Val Asp Leu Val Gln Thr Ser Glu Ala Ile Gln Glu Ser Leu  
 335 340 345

tac ccc aca gca cag ctt tgc cca tca ttt gag gaa gct gaa gca 1170  
 Tyr Pro Thr Ala Gln Leu Cys Pro Ser Phe Glu Glu Ala Glu Ala  
 350 355 360

act ccg tca cca gtt ttg cct gat att gtt atg gaa gca cca tta 1215  
 Thr Pro Ser Pro Val Leu Pro Asp Ile Val Met Glu Ala Pro Leu  
 365 370 375

aat tct ctc ctt cca agc gct ggt gct tct gta gtg cag ccc agt 1260

Asn Ser Leu Leu Pro Ser Ala Gly Ala Ser Val Val Gln Pro Ser  
 380 385 390  
 gta tcc cca ctg gaa gca cct cct cca gtt agt tat gac agt ata 1305  
 Val Ser Pro Leu Glu Ala Pro Pro Pro Val Ser Tyr Asp Ser Ile  
 395 400 405  
 aag ctt gag cct gaa aac ccc cca cca tat gaa gaa gcc atg aat 1350  
 Lys Leu Glu Pro Glu Asn Pro Pro Pro Tyr Glu Glu Ala Met Asn  
 410 415 420  
 gta gca cta aaa gct ttg gga aca aag gaa gga ata aaa gag cct 1395  
 Val Ala Leu Lys Ala Leu Gly Thr Lys Glu Gly Ile Lys Glu Pro  
 425 430 435  
 gaa agt ttt aat gca gct gtt cag gaa aca gaa gct cct tat ata 1440  
 Glu Ser Phe Asn Ala Ala Val Gln Glu Thr Glu Ala Pro Tyr Ile  
 440 445 450  
 tcc att gcg tgt gat tta att aaa gaa aca aag ctc tcc act gag 1485  
 Ser Ile Ala Cys Asp Leu Ile Lys Glu Thr Lys Leu Ser Thr Glu  
 455 460 465  
 cca agt cca gat ttc tct aat tat tca gaa ata gca aaa ttc gag 1530  
 Pro Ser Pro Asp Phe Ser Asn Tyr Ser Glu Ile Ala Lys Phe Glu  
 470 475 480  
 aag tcg gtg ccc gaa cac gct gag cta gtg gag gat tcc tca cct 1575  
 Lys Ser Val Pro Glu His Ala Glu Leu Val Glu Asp Ser Ser Pro  
 485 490 495  
 gaa tct gaa cca gtt gac tta ttt agt gat gat tcg att cct gaa 1620  
 Glu Ser Glu Pro Val Asp Leu Phe Ser Asp Asp Ser Ile Pro Glu  
 500 505 510  
 gtc cca caa aca caa gag gag gct gtg atg ctc atg aag gag agt 1665  
 Val Pro Gln Thr Gln Glu Glu Ala Val Met Leu Met Lys Glu Ser  
 515 520 525  
 ctc act gaa gtg tct gag aca gta gcc cag cac aaa gag gag aga 1710  
 Leu Thr Glu Val Ser Glu Thr Val Ala Gln His Lys Glu Glu Arg  
 530 535 540  
 ctt agt gcc tca cct cag gag cta gga aag cca tat tta gag tct 1755  
 Leu Ser Ala Ser Pro Gln Glu Leu Gly Lys Pro Tyr Leu Glu Ser  
 545 550 555  
 ttt cag ccc aat tta cat agt aca aaa gat gct gca tct aat gac 1800  
 Phe Gln Pro Asn Leu His Ser Thr Lys Asp Ala Ala Ser Asn Asp  
 560 565 570  
 att cca aca ttg acc aaa aag gag aaa att tct ttg caa atg gaa 1845  
 Ile Pro Thr Leu Thr Lys Lys Glu Lys Ile Ser Leu Gln Met Glu  
 575 580 585  
 gag ttt aat act gca att tat tca aat gat gac tta ctt tct tct 1890  
 Glu Phe Asn Thr Ala Ile Tyr Ser Asn Asp Asp Leu Leu Ser Ser  
 590 595 600  
 aag gaa gac aaa ata aaa gaa agt gaa aca ttt tca gat tca tct 1935  
 Lys Glu Asp Lys Ile Lys Glu Ser Glu Thr Phe Ser Asp Ser Ser

605	610	615
ccg att gag ata ata gat gaa ttt ccc acg ttt gtc agt gct aaa 1980		
Pro Ile	Glu Ile Ile Asp Glu Phe Pro Thr Phe Val Ser Ala Lys	
620	625	630
gat gat tct cct aaa tta gcc aag gag tac act gat cta gaa gta 2025		
Asp Asp Ser Pro Lys Leu Ala Lys Glu Tyr Thr Asp Leu Glu Val		
635	640	645
tcc gac aaa agt gaa att gct aat atc caa agc ggg gca gat tca 2070		
Ser Asp Lys Ser Glu Ile Ala Asn Ile Gln Ser Gly Ala Asp Ser		
650	655	660
ttg cct tgc tta gaa ttg ccc tgt gac ctt tct ttc aag aat ata 2115		
Leu Pro Cys Leu Glu Leu Pro Cys Asp Leu Ser Phe Lys Asn Ile		
665	670	675
tat cct aaa gat gaa gta cat gtt tca gat gaa ttc tcc gaa aat 2160		
Tyr Pro Lys Asp Glu Val His Val Ser Asp Glu Phe Ser Glu Asn		
680	685	690
agg tcc agt gta tct aag gca tcc ata tcg cct tca aat gtc tct 2205		
Arg Ser Ser Val Ser Lys Ala Ser Ile Ser Pro Ser Asn Val Ser		
695	700	705
gct ttg gaa cct cag aca gaa atg ggc agc ata gtt aaa agc gct 2250		
Ala Leu Glu Pro Gln Thr Glu Met Gly Ser Ile Val Lys Ser Ala		
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cac cat cac cat cac cat taa taa gctt		2278
His His His His His End		
725		

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<210> 16
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<212> PRT
<213> Artificial sequence

<220>
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<222> (-21)...(-1)

<220>
<221> CHAIN
<222> (1)...(777)
<223> fusion protein of truncated rat Nogo-A fragment and Strep-tag II

<220>
<221>
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<223> mature truncated Nogo-A

<220>
<221>
<222> (767)...(777)
<223> Strep-tag II affinity tag

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-10	-5	-1 1
Leu Phe Ala Leu Pro Ala Ala Ser Glu Pro Val Ile Pro Ser Ser		
5	10	15
Ala Glu Lys Ile Met Asp Leu Met Glu Gln Pro Gly Asn Thr Val		
20	25	30
Ser Ser Gly Gln Glu Asp Phe Pro Ser Val Leu Leu Glu Thr Ala		
35	40	45
Ala Ser Leu Pro Ser Leu Ser Pro Leu Ser Thr Val Ser Phe Lys		
50	55	60
Glu His Gly Tyr Leu Gly Asn Leu Ser Ala Val Ser Ser Ser Glu		
65	70	75
Gly Thr Ile Glu Glu Thr Leu Asn Glu Ala Ser Lys Glu Leu Pro		
80	85	90
Glu Arg Ala Thr Asn Pro Phe Val Asn Arg Asp Leu Ala Glu Phe		
95	100	105
Ser Glu Leu Glu Tyr Ser Glu Met Gly Ser Ser Phe Lys Gly Ser		
110	115	120
Pro Lys Gly Glu Ser Ala Ile Leu Val Glu Asn Thr Lys Glu Glu		
125	130	135
Val Ile Val Arg Ser Lys Asp Lys Glu Asp Leu Val Cys Ser Ala		
140	145	150
Ala Leu His Ser Pro Gln Glu Ser Pro Val Gly Lys Glu Asp Arg		
155	160	165
Val Val Ser Pro Glu Lys Thr Met Asp Ile Phe Asn Glu Met Gln		
170	175	180
Met Ser Val Val Ala Pro Val Arg Glu Glu Tyr Ala Asp Phe Lys		
185	190	195
Pro Phe Glu Gln Ala Trp Glu Val Lys Asp Thr Tyr Glu Gly Ser		
200	205	210
Arg Asp Val Leu Ala Ala Arg Ala Asn Val Glu Ser Lys Val Asp		
215	220	225
Arg Lys Cys Leu Glu Asp Ser Leu Glu Gln Lys Ser Leu Gly Lys		
230	235	240
Asp Ser Glu Gly Arg Asn Glu Asp Ala Ser Phe Pro Ser Thr Pro		
245	250	255
Glu Pro Val Lys Asp Ser Ser Arg Ala Tyr Ile Thr Cys Ala Ser		

260	265	270
Phe Thr Ser Ala Thr Glu Ser	Thr Thr Ala Asn Thr	Phe Pro Leu
275	280	285
Leu Glu Asp His Thr Ser Glu Asn Lys Thr Asp Glu Lys Lys Ile		
290	295	300
Glu Glu Arg Lys Ala Gln Ile Ile Thr Glu Lys Thr Ser Pro Lys		
305	310	315
Thr Ser Asn Pro Phe Leu Val Ala Val Gln Asp Ser Glu Ala Asp		
320	325	330
Tyr Val Thr Thr Asp Thr Leu Ser Lys Val Thr Glu Ala Ala Val		
335	340	345
Ser Asn Met Pro Glu Gly Leu Thr Pro Asp Leu Val Gln Glu Ala		
350	355	360
Cys Glu Ser Glu Leu Asn Glu Ala Thr Gly Thr Lys Ile Ala Tyr		
365	370	375
Glu Thr Lys Val Asp Leu Val Gln Thr Ser Glu Ala Ile Gln Glu		
380	385	390
Ser Leu Tyr Pro Thr Ala Gln Leu Cys Pro Ser Phe Glu Glu Ala		
395	400	405
Glu Ala Thr Pro Ser Pro Val Leu Pro Asp Ile Val Met Glu Ala		
410	415	420
Pro Leu Asn Ser Leu Leu Pro Ser Ala Gly Ala Ser Val Val Gln		
425	430	435
Pro Ser Val Ser Pro Leu Glu Ala Pro Pro Pro Val Ser Tyr Asp		
440	445	450
Ser Ile Lys Leu Glu Pro Glu Asn Pro Pro Pro Tyr Glu Glu Ala		
455	460	465
Met Asn Val Ala Leu Lys Ala Leu Gly Thr Lys Glu Gly Ile Lys		
470	475	480
Glu Pro Glu Ser Phe Asn Ala Ala Val Gln Glu Thr Glu Ala Pro		
485	490	495
Tyr Ile Ser Ile Ala Cys Asp Leu Ile Lys Glu Thr Lys Leu Ser		
500	505	510
Thr Glu Pro Ser Pro Asp Phe Ser Asn Tyr Ser Glu Ile Ala Lys		
515	520	525
Phe Glu Lys Ser Val Pro Glu His Ala Glu Leu Val Glu Asp Ser		
530	535	540
Ser Pro Glu Ser Glu Pro Val Asp Leu Phe Ser Asp Asp Ser Ile		
545	550	555
Pro Glu Val Pro Gln Thr Gln Glu Glu Ala Val Met Leu Met Lys		
560	565	570

Glu Ser Leu Thr Glu Val Ser Glu Thr Val Ala Gln His Lys Glu  
 575 580 585  
 Glu Arg Leu Ser Ala Ser Pro Gln Glu Leu Gly Lys Pro Tyr Leu  
 590 595 600  
 Glu Ser Phe Gln Pro Asn Leu His Ser Thr Lys Asp Ala Ala Ser  
 605 610 615  
 Asn Asp Ile Pro Thr Leu Thr Lys Lys Glu Lys Ile Ser Leu Gln  
 620 625 630  
 Met Glu Glu Phe Asn Thr Ala Ile Tyr Ser Asn Asp Asp Leu Leu  
 635 640 645  
 Ser Ser Lys Glu Asp Lys Ile Lys Glu Ser Glu Thr Phe Ser Asp  
 650 655 660  
 Ser Ser Pro Ile Glu Ile Ile Asp Glu Phe Pro Thr Phe Val Ser  
 665 670 675  
 Ala Lys Asp Asp Ser Pro Lys Leu Ala Lys Glu Tyr Thr Asp Leu  
 680 685 690  
 Glu Val Ser Asp Lys Ser Glu Ile Ala Asn Ile Gln Ser Gly Ala  
 695 700 705  
 Asp Ser Leu Pro Cys Leu Glu Leu Pro Cys Asp Leu Ser Phe Lys  
 710 715 720  
 Asn Ile Tyr Pro Lys Asp Glu Val His Val Ser Asp Glu Phe Ser  
 725 730 735  
 Glu Asn Arg Ser Ser Val Ser Lys Ala Ser Ile Ser Pro Ser Asn  
 740 745 750  
 Val Ser Ala Leu Glu Pro Gln Thr Glu Met Gly Ser Ile Val Lys  
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 Ser Ala Trp Arg His Pro Gln Phe Gly Gly  
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<210> 17
<211> 739
<212> PRT
<213> Artificial sequence

<220>
<221> SIGNAL
<222> (-21)...(-1)

<220>
<221> CHAIN
<222> (1)...(718)
<223> fusion protein of truncated rat Nogo-A fragment and Strep-tag II

<220>

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<221>  
<222> (1)...(708)  
<223> mature truncated Nogo-A

<220>  
<221>  
<222> (709)...(718)  
<223> Strep-tag affinity tag

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	-10							-5			-1		1		
Lys	Glu	His	Gly	Tyr	Leu	Gly	Asn	Leu	Ser	Ala	Val	Ser	Ser	Ser	
	5							10				15			
Glu	Gly	Thr	Ile	Glu	Glu	Thr	Leu	Asn	Glu	Ala	Ser	Lys	Glu	Leu	
	20						25					30			
Pro	Glu	Arg	Ala	Thr	Asn	Pro	Phe	Val	Asn	Arg	Asp	Leu	Ala	Glu	
	35						40				45				
Phe	Ser	Glu	Leu	Glu	Tyr	Ser	Glu	Met	Gly	Ser	Ser	Phe	Lys	Gly	
	50						55				60				
Ser	Pro	Lys	Gly	Glu	Ser	Ala	Ile	Leu	Val	Glu	Asn	Thr	Lys	Glu	
	65						70				75				
Glu	Val	Ile	Val	Arg	Ser	Lys	Asp	Lys	Glu	Asp	Leu	Val	Cys	Ser	
	80						85				90				
Ala	Ala	Leu	His	Ser	Pro	Gln	Glu	Ser	Pro	Val	Gly	Lys	Glu	Asp	
	95						100				105				
Arg	Val	Val	Ser	Pro	Glu	Lys	Thr	Met	Asp	Ile	Phe	Asn	Glu	Met	
	110						115				120				
Gln	Met	Ser	Val	Val	Ala	Pro	Val	Arg	Glu	Glu	Tyr	Ala	Asp	Phe	
	125						130				135				
Lys	Pro	Phe	Glu	Gln	Ala	Trp	Glu	Val	Lys	Asp	Thr	Tyr	Glu	Gly	
	140						145				150				
Ser	Arg	Asp	Val	Leu	Ala	Ala	Arg	Ala	Asn	Val	Glu	Ser	Lys	Val	
	155						160				165				
Asp	Arg	Lys	Cys	Leu	Glu	Asp	Ser	Leu	Glu	Gln	Lys	Ser	Leu	Gly	
	170						175				180				
Lys	Asp	Ser	Glu	Gly	Arg	Asn	Glu	Asp	Ala	Ser	Phe	Pro	Ser	Thr	
	185						190				195				
Pro	Glu	Pro	Val	Lys	Asp	Ser	Ser	Arg	Ala	Tyr	Ile	Thr	Cys	Ala	
	200						205				210				
Ser	Phe	Thr	Ser	Ala	Thr	Glu	Ser	Thr	Thr	Ala	Asn	Thr	Phe	Pro	
	215						220				225				

Leu Leu Glu Asp His Thr Ser Glu Asn Lys Thr Asp Glu Lys Lys  
 230 235 240  
 Ile Glu Glu Arg Lys Ala Gln Ile Ile Thr Glu Lys Thr Ser Pro  
 245 250 255  
 Lys Thr Ser Asn Pro Phe Leu Val Ala Val Gln Asp Ser Glu Ala  
 260 265 270  
 Asp Tyr Val Thr Thr Asp Thr Leu Ser Lys Val Thr Glu Ala Ala  
 275 280 285  
 Val Ser Asn Met Pro Glu Gly Leu Thr Pro Asp Leu Val Gln Glu  
 290 295 300  
 Ala Cys Glu Ser Glu Leu Asn Glu Ala Thr Gly Thr Lys Ile Ala  
 305 310 315  
 Tyr Glu Thr Lys Val Asp Leu Val Gln Thr Ser Glu Ala Ile Gln  
 320 325 330  
 Glu Ser Leu Tyr Pro Thr Ala Gln Leu Cys Pro Ser Phe Glu Glu  
 335 340 345  
 Ala Glu Ala Thr Pro Ser Pro Val Leu Pro Asp Ile Val Met Glu  
 350 355 360  
 Ala Pro Leu Asn Ser Leu Leu Pro Ser Ala Gly Ala Ser Val Val  
 365 370 375  
 Gln Pro Ser Val Ser Pro Leu Glu Ala Pro Pro Pro Val Ser Tyr  
 380 385 390  
 Asp Ser Ile Lys Leu Glu Pro Glu Asn Pro Pro Pro Tyr Glu Glu  
 395 400 405  
 Ala Met Asn Val Ala Leu Lys Ala Leu Gly Thr Lys Glu Gly Ile  
 410 415 420  
 Lys Glu Pro Glu Ser Phe Asn Ala Ala Val Gln Glu Thr Glu Ala  
 425 430 435  
 Pro Tyr Ile Ser Ile Ala Cys Asp Leu Ile Lys Glu Thr Lys Leu  
 440 445 450  
 Ser Thr Glu Pro Ser Pro Asp Phe Ser Asn Tyr Ser Glu Ile Ala  
 455 460 465  
 Lys Phe Glu Lys Ser Val Pro Glu His Ala Glu Leu Val Glu Asp  
 470 475 480  
 Ser Ser Pro Glu Ser Glu Pro Val Asp Leu Phe Ser Asp Asp Ser  
 485 490 495  
 Ile Pro Glu Val Pro Gln Thr Gln Glu Glu Ala Val Met Leu Met  
 500 505 510  
 Lys Glu Ser Leu Thr Glu Val Ser Glu Thr Val Ala Gln His Lys  
 515 520 525

Glu Glu Arg Leu Ser Ala Ser Pro Gln Glu Leu Gly Lys Pro Tyr  
530 535 540

Leu Glu Ser Phe Gln Pro Asn Leu His Ser Thr Lys Asp Ala Ala  
545 550 555

Ser Asn Asp Ile Pro Thr Leu Thr Lys Lys Glu Lys Ile Ser Leu  
560 565 570

Gln Met Glu Glu Phe Asn Thr Ala Ile Tyr Ser Asn Asp Asp Leu  
575 580 585

Leu Ser Ser Lys Glu Asp Lys Ile Lys Glu Ser Glu Thr Phe Ser  
590 595 600

Asp Ser Ser Pro Ile Glu Ile Ile Asp Glu Phe Pro Thr Phe Val  
605 610 615

Ser Ala Lys Asp Asp Ser Pro Lys Leu Ala Lys Glu Tyr Thr Asp  
620 625 630

Leu Glu Val Ser Asp Lys Ser Glu Ile Ala Asn Ile Gln Ser Gly  
635 640 645

Ala Asp Ser Leu Pro Cys Leu Glu Leu Pro Cys Asp Leu Ser Phe  
650 655 660

Lys Asn Ile Tyr Pro Lys Asp Glu Val His Val Ser Asp Glu Phe  
665 670 675

Ser Glu Asn Arg Ser Ser Val Ser Lys Ala Ser Ile Ser Pro Ser  
680 685 690

Asn Val Ser Ala Leu Glu Pro Gln Thr Glu Met Gly Ser Ile Val  
695 700 705

Lys Ser Ala Trp Arg His Pro Gln Phe Gly Gly  
710 715